



3M™ Enhanced Ambulatory Patient Grouping Systems

# Methodology Overview

Software version 3.18

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# History and explanation of Ambulatory Patient Groups

## Background

The OMNIBUS Budget Reconciliation Act (OBRA) of 1990 required the Health Care Financing Administration (HCFA), since renamed the Center for Medicare and Medicaid Services (CMS), to design and evaluate a prospective payment system (PPS) for outpatient care. OBRA called for the evaluation of an outpatient prospective payment system (OPPS) for all hospital outpatient services (e.g., same-day surgery units, emergency departments, outpatient clinics, etc.). The facility cost refers to the hospital cost for providing care (e.g., room charges, medical and surgical supplies, etc.) and excludes the cost of physician and other professional services.

In 1990 CMS contracted with 3M Health Information Systems (3M HIS) to develop the Ambulatory Patient Groups (APGs) (Averill, Goldfield et al, 1993; Goldfield, Averill, et al., 1997). The APGs are a patient classification system that was designed to be used as the basis of an OPPS. In 1995 Iowa Medicaid became the first payer to implement an APG based OPPS (Vertrees, Pollatsek et al., 1994). Version 2.0 of the APGs was released in 1995.

Between 1995 and 2000 a series of laws were passed by Congress and proposed regulations issued by CMS that defined the Medicare OPPS. The following table contains a history of these actions. The Balanced Budget Refinement Act included specific statistical criteria relating to the patient classification system used as the basis of the Medicare OPPS. The end result of this process was that CMS developed an APG derivative called Ambulatory Payment Classification (APCs). An APC based Medicare OPPS was implemented in August of 2000.

OMNIBUS Budget Reconciliation Act	1990	Required CMS to design and evaluate a PPS for the facility cost of hospital-based outpatient care
CMS contracts with 3M HIS to develop APGs	1990	V1.0 APGs released by 3M HIS 1992
CMS contracts with 3M HIS to update APGs and design an outpatient PPS	1992	V2.0 APGs released by 3M HIS in 1994
Iowa Medicaid implements the first APG based outpatient PPS	1995	Following the Iowa implementation, a number of state Medicaid and Blue Cross Plans begin implementing APG based outpatient PPS
CMS submits outpatient PPS proposal to Congress	1995	Proposes that an APG-like outpatient PPS be the basis of a Medicare outpatient hospital payment
Balanced Budget Act	1997	Required CMS to implement an outpatient PPS by January 1999.
CMS publishes proposed Medicare outpatient PPS	1998	APCs are proposed as basis of Medicare outpatient PPS
Balanced Budget Refinement Act	1999	Required CMS to make major changes to proposed APCs

Medicare outpatient PPS implemented	2000	APC system is highly specific to Medicare
Cost control pressure on non-Medicare payers generate renewed interest in APGs	2007	The Enhanced APGs released by 3M HIS

Although six major non-Medicare payers had implemented an APG based OPPS between 1995-2000, the implementation of the APC based Medicare OPPS shifted the focus of outpatient payment reform among payers to APC based systems. As a result, though APGs continued to be maintained, further development and refinement of APGs ceased. However, due to policy decisions and the statistical restrictions imposed by the Balanced Budget Refinement Act, the APC based Medicare OPPS has evolved into a highly Medicare specific, complex system of payment. As a result, fewer major non-Medicare payers have chosen to use APCs. A renewed interest in the original APG PPS design has occurred. This renewed interest led to the release of the 3M™ Enhanced Ambulatory Patient Grouping (EAPG) System, an enhanced version of the APGs, in 2007.

The development of APGs and the key differences between APG 2.0 and Enhanced APGs are described. Since the primary application of APGs is for payment, the basic components of an OPPS are also described and the key policy decisions payers will need to make in implementing an OPPS are summarized.

## Assumptions underlying a Prospective Payment System

Under a Prospective Payment System (PPS) the payment rate received by a hospital remains unchanged regardless of the hospital's overall cost experience. This risk generates a strong financial incentive for hospitals to control costs. The underlying assumption of a PPS is that the financial risks and incentives inherent in the system will cause hospitals to operate in a more cost-effective manner. In essence, the success of prospective payment is, in part, based on shifting the primary responsibility for cost control from the payer to the hospital.

The first national PPS was Medicare Inpatient PPS (IPPS). The unit of payment for the Medicare IPPS was established as the discharge. Hospital case-mix was quantified using Diagnosis Related Groups (DRGs) patient classification system. Predetermined payment rates were established for each DRG. The DRG payment rates were considered payment in full and were not negotiable.

The design of an OPPS has closely followed the basic structure of the IPPS. The basic unit of payment selected for the outpatient PPS is the visit. A visit is a contact between the patient and a healthcare professional. The visit can be for a surgical procedure, for a medical evaluation or simply for an ancillary service such as a chest x-ray. For each type of visit, a prospective price is established that includes all routine services associated with the visit. Since the cost of the routine services rendered during a visit is included in the payment for the visit, hospitals have a financial incentive to control the amount of services rendered. In order to have a visit-based outpatient PPS, it was necessary to develop a patient classification system that could serve as the basic unit of payment. A patient classification system for outpatients serves the same function as the DRGs in the inpatient IPPS. APGs and APCs have been the two outpatient classification systems that have been developed for use in an OPPS. The basic objective of an outpatient classification system is to explain the amount and type of resources used in an

outpatient visit, thereby allowing prospective payment amounts to be established for each type of visit.

## Characteristics of an Outpatient Classification System

The availability of an appropriate outpatient classification system is critical to the success of any OPPS. Therefore, an outpatient classification system should have the following characteristics.

### **Comprehensiveness**

The outpatient classification system must be able to describe every type of patient seen in an ambulatory setting. This includes medical patients, patients undergoing a procedure and patients who receive ancillary services only.

### **Administrative Simplicity**

The outpatient classification system should be administratively straightforward to implement. The number of patient classes should be kept to a reasonable number. An outpatient classification system containing a manageable number of patient classes (hundreds not thousands) will be more easily understood by hospitals and will ease the administrative burden on both facilities and payers. In addition, the data used to define the outpatient classes should be compatible with existing billing, data collection, coding, storage and processing practices. Such compatibility will decrease implementation costs, data errors and other administrative problems.

### **Homogeneous Resource Use**

The amount and type of resources (e.g., operating room time, medical surgical supplies, etc.) used to treat patients in each outpatient class should be homogeneous. If resources vary widely within an outpatient class, it will be difficult to develop equitable payment rates. If a hospital treats a disproportionate number of either the expensive or inexpensive cases within an outpatient class, then the aggregate payments to that hospital might not be appropriate. Further, the facility might be encouraged to treat only the less costly patients within the outpatient class causing a potential access problem for the complex cases. Thus, a homogeneous pattern of resource use is a critical characteristic of any classification system used in an OPPS.

### **Clinical Meaningfulness**

The definition of each outpatient group should be clinically meaningful. For example, an outpatient group involving a procedure should, in general, contain only procedures on the same body system, which are similar in extent and utilize the same method (e.g., surgical, endoscopic, percutaneous, etc.). The underlying assumption in a PPS is that hospitals will respond to the financial incentives in the system and become more efficient. Clinical meaningfulness is critical because in order to respond effectively, hospitals must communicate the incentives to their medical staffs. A clinically meaningful outpatient classification system will be more readily accepted by hospitals and physicians and will be more useful as a communication and management tool.

### **Minimal Upcoding and Code Fragmentation**

In the outpatient classification system, there should be minimal opportunities for providers to assign a patient to a higher paying group through upcoding. An outpatient classification system with many groups with subtle distinctions between them is susceptible to upcoding. In general, the groups should be as broad and inclusive as possible without sacrificing resource homogeneity or clinical meaningfulness. In addition, there should be minimal opportunities for increasing payment by separately reporting the constituent parts of a procedure.

### **Flexibility**

In a visit-based payment system, there is a wide array of options in terms of which ancillary services should be included in the visit payment. The extent to which ancillary services are included in the visit payment is a policy decision. The outpatient classification system must be flexible enough to accommodate a full range of options for incorporating ancillary services into the visit payment. In addition, the outpatient classification system should be structured to allow changes in technology and practice patterns to be easily incorporated. The outpatient classification system should provide a flexible framework that can adapt to change without requiring a major restructuring of the system.

Because of the fundamental role that the outpatient classification system plays in an OPPS, it is essential that the outpatient classification system possess substantially all of the above characteristics.

## **Development of EAPGs**

EAPGs are designed to explain the amount and type of resources used in an ambulatory visit. These resources include pharmaceuticals, supplies, ancillary tests, equipment, type of room, treatment time, etc. Patients in each EAPG have similar clinical characteristics, resource use, and costs. Similar resource use means that the resources used are similar for all patients within the same EAPG. However, some variation in resource use will remain among the patients in each EAPG. In other words, the definition of the EAPG is not so specific that every patient included in the same EAPG is identical, but rather the level of variation in patient resource use is known and predictable. Thus, although the precise resource use of a particular patient cannot be predicted by knowing the EAPG of the patient, the average pattern of resource use of a group of patients in an EAPG can be accurately predicted.

Patients in each EAPG also have similar clinical characteristics. Similar clinical characteristics mean that the definition of the EAPG should be for a common organ system or etiology and that a specific medical specialty will typically provide care to the patients in the EAPG. In addition, all available patient characteristics that consistently affect resource use should be included in the definition of the EAPGs. For example, patients with diabetes may or may not have ketoacidosis. Although these patients are the same from organ system, etiology and medical specialty perspectives, the EAPGs will assign these patients to different groups because the presence of ketoacidosis consistently increases the resource use of diabetic patients. On the other hand, sets of unrelated surgical procedures should not be used to define an EAPG because there is no medical rationale to substantiate that resource use would be expected to be similar.

The definition of similar clinical characteristics is, of course, dependent on the goal of the classification methodology. For EAPGs, the definition of clinical similarity relates to the medical rationale for differences in resource use. If, on the other hand, the classification goal was related to patient prognosis, then the definition of patient characteristics that were clinically similar might be different. The requirement that EAPGs be clinically homogeneous caused more groups to be formed than is necessary for explaining resource use alone. For example, patients with a dilation and curettage or a simple hemorrhoid procedure are quite similar in terms of most measures of resource use. However, different organ systems and different medical specialties are involved. Thus, the requirement that EAPGs have similar clinical characteristics precludes the possibility of these types of patients being in the same EAPG.

EAPGs were developed to encompass the full range of ambulatory settings including same day surgery units, hospital emergency rooms, and outpatient clinics. In addition, EAPGs can address phone contacts, home visits and physician visits. However, they do not address nursing home care, inpatient care, self-administered pharmaceuticals, or other miscellaneous services.

The data elements used to define EAPGs were limited to the information routinely collected from health insurance claim forms, typically the institutional UB healthcare claim form (UB-04) published by the NUBC or the professional claim form (CMS-1500) published by CMS. It consists of the diagnoses coded in International Classification of Diagnoses 10th Revision Clinical Modifications (ICD-10-CM) and procedures coded in Healthcare Common Procedure Coding System (HCPCS), level I (CPT® codes published by the AMA) and level II (HCPCS codes published by the Centers for Medicare & Medicaid Services - CMS). Other patient characteristics such as demographic information (e.g., patient age) or service descriptors (e.g., modifiers) used in the definition of the EAPGs were restricted to those readily available to ensure that the EAPGs could be readily implemented.

## Selection of the Initial Classification Variable

The first step in developing a patient classification methodology is to choose the initial classification variable. In the DRGs, the principal diagnosis is used to classify patients into a set of mutually exclusive Major Diagnostic Categories (MDCs). Within each MDC, procedure, age and complication and comorbidities are used to complete the DRG classification methodology. EAPGs use procedure instead of diagnosis as the initial classification variable. The decision to do so was based on the following considerations:

- When a significant procedure is performed in an ambulatory setting, it is normally the reason for the visit. The procedure will normally be scheduled in advance and will consume the vast majority of resources associated with the visit.
- With procedure as the initial classification variable, each procedure is assigned to only one EAPG. With principal diagnosis as the initial classification variable, the same procedure could be assigned to many different EAPGs depending on the principal diagnosis. Having each procedure in only one EAPG also reduces the number of EAPGs and simplifies the establishment of prospective prices.

Once the decision to use procedure as the initial classification variable was made, it was then necessary to partition all procedures into a set of mutually exclusive and exhaustive procedure groups. The first step in the process was to identify all procedures that could be done only on an

inpatient basis. An inpatient procedure was defined as a procedure that requires at least 24 hours of post-operative recovery time or monitoring before a patient can be safely discharged. Some procedures, such as organ transplants or open cardiothoracic procedures, are clearly inpatient procedures. However, there are other procedures such as the complex treatment of an open fracture that is normally done on an inpatient basis but can sometimes be done on an ambulatory basis. Further, patients with the same HCPCS code can have a great deal of variation in the complexity of the procedure performed. For example, the treatment of an open humeral fracture can vary considerably in complexity.

Typically, only the simplest cases of procedures normally done on an inpatient basis are done on an ambulatory basis. Thus, an open humeral fracture treated on an ambulatory basis will have minimal bone displacement and tissue damage. Such procedures are included in the EAPG procedure classification. When grouping procedures together to form homogeneous subclasses, it is important to recognize the variations of severity within a HCPCS code and that only the simplest cases of complex procedures are treated in an ambulatory setting.

Over the past several years, the number of procedures considered inpatient only in EAPGs for ambulatory cases has progressively decreased as advances in technology and treatment have caused a shift of procedures traditionally performed on an inpatient basis to the outpatient setting. This recent activity has reduced the number of procedures that remain on the inpatient only list under EAPGs, and beginning with grouper version 3.17, the list of inpatient only procedures has been completely eliminated, and the decision for performing a procedure previously designated as inpatient only in an outpatient setting should be determined by the provider or facility performing the procedure after careful assessment of risk for each individual patient.

The procedures which could be performed on an ambulatory basis were then assigned to one of the following two classes:

**Significant Procedure.** This is a procedure that is normally scheduled, typically surgical or invasive, constitutes the reason for the visit and dominates the time and resources expended during the visit. (e.g., cataract surgery). Significant procedures range in scope from a superficial needle biopsy to cardiac pacemaker or defibrillator insertion.

**Ancillary Services.** The term ancillary services is used to refer to both ancillary tests and ancillary procedures. An ancillary test is one that is ordered by the primary physician to assist in patient diagnosis or treatment. Radiology, laboratory and pathology constitute ancillary tests. An ancillary procedure is a procedure that increases but does not dominate the time and resources expended during a visit. Examples of ancillary procedures are immunizations, the insertion of an intrauterine device (IUD), or a respiratory therapy nebulizer treatment.

Only patients with a significant procedure were assigned to significant procedure EAPGs. All medical services provided to the patient were assumed to be an integral part of the procedure. Patients who received medical treatment but who had no significant procedures performed were assigned to Medical EAPGs. Examples of medical treatments which do not involve a significant procedure include treatment for poisoning, neonatal care, and well care.

Patients who undergo a significant procedure are assigned to a significant procedure EAPG. For example, a patient who had a skin excision performed to remove a skin lesion would be placed in a significant procedure EAPG based on the HCPCS code which describes the precise

procedure. Patients receiving medical treatment which does not involve a significant procedure were assigned to medical EAPGs. A patient who visited a physician to have a skin lesion evaluated and had no significant procedures performed would be assigned to a medical EAPG based on the ICD-10-CM diagnosis code. A patient who neither received medical treatment nor underwent a significant procedure, but had an ancillary service performed would be assigned to only an ancillary service EAPG.

## Development of Significant Procedure EAPGs

Significant ambulatory procedures are subdivided into groups of HCPCS codes based on the body system associated with the procedure:

- Skin and Integumentary System
- Breast Procedures
- Musculoskeletal System
- Respiratory System
- Cardiovascular System
- Hematologic, Lymphatic and Endocrine Systems
- Gastrointestinal System
- Hepatobiliary System
- Genitourinary System
- Male Reproductive System
- Female Reproductive System
- Neurological System
- Ophthalmological System
- Otolaryngological System
- Rehabilitation
- Radiologic Procedures
- Behavioral Health and Substance Abuse Therapies
- Nuclear Medicine
- Radiation Therapy
- Dental Procedures
- Obstetric Procedures

Body systems were formed as the first step toward ensuring that the procedures in each EAPG were clinically similar. The significant procedures in each body system generally correspond to a single organ system and are associated with a particular medical specialty. The body systems

used in the procedure EAPGs are similar to the Major Diagnostic Categories (MDCs) for the DRGs.

Once each significant procedure was assigned to a body system, the procedures in each body system were subdivided into clinically similar groups. The classification variables considered in the formation of the procedure groups are shown in table 2. In general, method was used as the primary classification variable. Different methods such as surgery, endoscopy, manipulation, dilation, catheterization, laser and needle often require different types of rooms, equipment and supplies as well as different amounts of time or complexity of the procedure.

<b>Variable</b>	<b>Example</b>
Site	Face, Hand, etc.
Extent	Excision Size: 2 cm Versus 20 cm
Purpose	Diagnostic or Therapeutic
Type	Incision, Excision, or Repair
Method	Surgical, Endoscopic, etc.
Device	Insertion or Removal
Medical Specialty	Urology, Gynecology, etc.
Complexity	Time Needed to Perform Procedure

Another aspect of extent is the complexity of the procedure. Complexity basically refers to the amount of time normally required to perform a procedure. For example, the excision of a pressure ulcer will generally require more time than the excision of a skin lesion. Thus, the excision of the pressure ulcer was viewed as more complex, and therefore, assigned to a different EAPG. Anatomical site (e.g., face, hand, etc.) within a body system was used in order to ensure clinical similarity (e.g., procedures of the external ear versus the internal ear) and was also used to implicitly reflect complexity (e.g., treatment of a closed fracture of a finger is usually less complex than treatment of a closed fracture of other sites).

If a procedure involved the insertion of a device (e.g., neurostimulator), then a separate EAPG was formed in order to recognize the cost of the device. Medical specialty was never explicitly used in the significant procedure EAPG formation, but procedures normally done by different medical specialties were usually put in different EAPGs.

Prior to version 3.5, there was a single group of significant procedure EAPGs which were all subject to the same processing rules of consolidation, packaging, discounting, etc. However, changes in healthcare delivery systems over several years and the practical implementation needs of users identified the need to be able to apply different processing conditions to defined groups of significant procedure EAPGs. Beginning with EAPG version 3.5, five sub-groups of significant procedure EAPGs were defined as separate EAPG types with the flexibility to apply each or all of the usual significant procedure processing conditions, such as consolidation, ancillary packaging, or multiple procedure discounting, separately.

Each new type was identified as exhibiting common characteristics that would facilitate the consideration and designation of the processing conditions that would apply to all the members.

The former Significant Procedures EAPG type was subdivided into the following six procedure types: Significant Procedure; Physical Therapy and Rehabilitation; Behavioral Health and Counseling; Dental or Oral Surgery Procedure; Radiologic Procedure, and Diagnostic or Therapeutic Procedure EAPGs.

## Development of Medical EAPGs

Medical EAPGs describe patients who receive medical treatment but do not have a significant procedure performed during the visit. The fact that a patient had a specific significant procedure performed provides a great deal of precise information regarding the amount and type of resources typically used during the visit. Patients without a significant procedure (i.e., medical patients) can use a wide range of resources depending on the condition of the patient at the time of the visit. Medical patients can be described using the diagnoses of the patient coded in ICD-10-CM which allows both specific diseases (e.g., pneumonia) as well as signs, symptoms and findings (SSFs) (e.g., chest pain, melena, elevated sedimentation rate, etc.) to be coded. The term “diagnosis” is used to refer generically to SSFs and diseases. The standard health insurance claim form and the ICD-10-CM ambulatory coding guidelines require that the diagnosis that was chiefly responsible for the services provided be indicated as the principal, or primary, diagnosis. Further, any additional diagnoses that are present may be listed on the claim as secondary diagnoses or as the patient’s reason for visit for unscheduled encounters. The primary variable used to form the medical EAPGs is the diagnosis coded as the principal diagnosis. The principal diagnosis is the primary determinant of the resources used (e.g., time, tests ordered, etc.) during the visit. Thus, the medical EAPGs are based on the type of patient being treated.

The treatment of a medical patient is often highly influenced by the SSFs present at the time of the visit. In general, the coding of a disease simply indicates that the disease was present but gives no indication of how extensive or severe the disease was at the time of the visit. The coding of SSFs in addition to the underlying disease provides some indication of the extensiveness of the disease. The use of SSFs in the definition of the medical EAPGs was difficult because of the following limitations in the ICD-10-CM codes for SSFs:

- Many of the ICD-10-CM codes for SSFs are not precise. For example, abdominal rigidity (code R1930) has no precise clinical definition.
- There are a large number of SSF codes that refer to abnormal laboratory results that are imprecise. For example, a diagnosis of hypokalemia does not convey useful information because the range of potassium levels associated with hypokalemia can vary significantly in terms of clinical significance.

In addition to the imprecision of many of the SSF codes, the use of SSFs as a primary variable in the medical EAPGs could create opportunities for upcoding. If the EAPGs for SSFs had a high payment weight, then there would be a financial motivation to code the SSFs instead of the underlying disease. The fact that the ICD-10-CM coding rules allow only nonroutine SSFs to be coded also limited the applicability of SSFs in the definition of the medical EAPGs. As a result of the problems associated with SSFs, the SSFs used in the definition of the medical EAPGs were restricted to SSFs with the following characteristics:

- SSFs with a relatively precise clinical meaning
- SSFs that were significant enough not to be a routine part of most diseases
- SSFs that were significant enough to tend to dominate the resources used during the visit. Thus, upcoding is not an issue because assignment to a major SSF EAPG is appropriate irrespective of the underlying disease.

Prior to grouper version 3.17, a single major SSF EAPG for medical patients was formed. Examples of SSFs included in the major SSF EAPG are acute pancreatitis and hypertensive crisis. In addition to the SSF codes, there were also ICD-10-CM codes included in the major SSF EAPG that specify both the underlying disease and the SSF (e.g., diabetic ketoacidosis with coma). In the instance where a major SSF diagnosis is present in the claim record as the reason for the visit or as a secondary diagnosis, the major SSF EAPG is assigned and the principal or primary diagnosis is not used for assignment. The major SSF EAPG identifies the medical patients with extensive diseases who are usually treated in emergency rooms and who require significant amounts of resources. Patients who have non-major SSFs coded as the principal diagnosis, are assigned to the medical EAPG that is usually associated with the SSF (e.g., cough is assigned to the other respiratory diagnoses EAPG).

In more recent years, what has been observed in outpatient claims data is a higher incidence of major SSF diagnoses reported as the principal diagnosis and not necessarily as a secondary or reason for visit diagnosis. There have also been efforts recently to improve the alignment of diagnosis code grouping assignments for medical encounters across outpatient and inpatient settings under DRGs. Because of these circumstances, the number of diagnosis codes remaining in the major SSF EAPG beginning with grouper version 3.17 have been eliminated and are instead assigned to more clinically precise medical EAPG groups based on the clinical characteristics of patient encounters reporting these diagnosis codes as the principal diagnosis. As an example, pulmonary embolism without acute cor pulmonale, which has been a most frequent major SSF diagnosis reported on outpatient claims, is now assigned to a separate medical EAPG specifically for Pulmonary Embolism.

After patients who had a major SSF were assigned to a separate EAPG, the medical EAPGs were formed on the basis of the ICD-10-CM diagnosis code that was the principal diagnosis. Thus, all possible ICD-10-CM diagnoses were divided into a set of mutually exclusive and clinically similar groups. The classification variables considered in the formation of the medical groups are shown in the following table.

<b>Variable</b>	<b>Example</b>
Etiology	Pregnancy, Poisoning, etc.
Body System	Respiratory, Digestive, etc.
Type of Disease	Acute or Chronic
Medical Specialty	Ophthalmology, Gynecology, etc.
Complexity	Time Needed to Treat the Patient

The initial variable used to form the medical EAPGs was the etiology of the diagnosis that was the principal diagnosis:

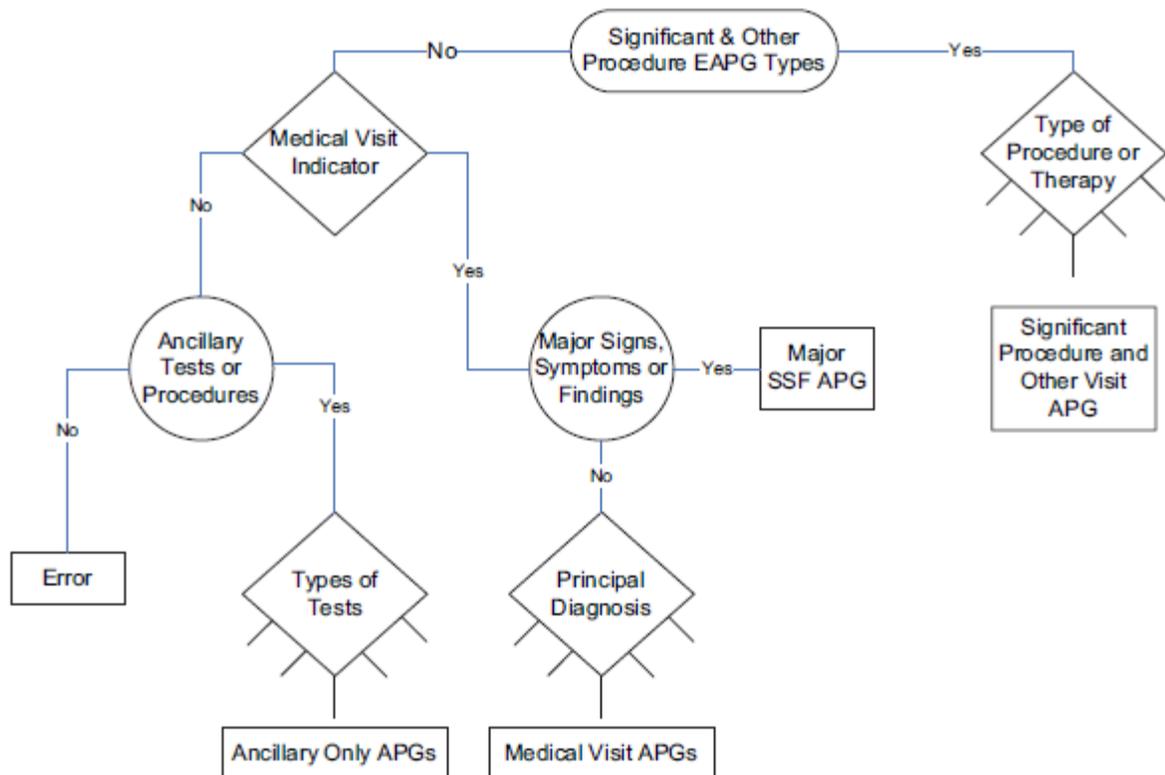
- Well Care and Administrative
- Behavioral Health Illness
- Infections
- Pregnancy
- Substance Abuse
- Burns
- Poisoning
- Neonate
- Other

As a first step in the formulation of the medical EAPGs, each ICD-10-CM diagnosis code was assigned to one of the etiology subgroups. The 'other' etiology group encompasses a broad spectrum of diseases from acute diseases such as pneumonia to chronic diseases such as hypertension. The "other" group was then divided into subgroups based on the specific body system or associated clinical characteristics of the diagnosis that was the principal diagnosis:

- Nervous System Diseases
- Eye Diseases
- Ear, Nose, Mouth, and Throat Diseases
- Pulmonary System Diseases
- Circulatory System Diseases
- Digestive System Diseases
- Liver and Biliary System Diseases
- Major Signs, Symptoms and Findings
- Musculoskeletal Diseases
- Skin and Breast Diseases
- Endocrine, Nutritional and Metabolic Diseases
- Kidney and Urinary Tract Diseases
- Male Reproductive System Diseases
- Female Reproductive System Diseases
- Immunologic and Hematologic Diseases
- Lymphatic and Other Malignancy Diseases
- Infectious Diseases
- Behavioral Health Diseases

- Poisonings and Other Injuries
- Rehabilitation
- Preventive Medicine

The initial subdivision of the medical EAPGs is shown in the following figure (Figure 1). Once all the subclasses based on the etiology and the body system were formed, then the other classification variables in the previous table were used to further subdivide each etiology and body system.



Whether a diagnosis was acute or chronic was not explicitly used in the formation of the medical EAPGs. There are medical EAPGs that contain only diagnoses that are acute or chronic, but a medical EAPG was never formed for the explicit purpose of identifying acute or chronic diseases. Medical specialty was never explicitly used in the medical EAPG formation, but diseases normally treated by different medical specialties were usually put in different EAPGs. In previous versions, gender was used in the formation of some EAPGs with the EAPG assignment of some diagnosis codes depending on the gender of the patient. Patient age is used in the definition of specific preventive medicine medical EAPGs.

Whether a patient was a new patient, or an established patient was considered as a possible variable in the formation of the medical EAPGs. However, the new patient/established patient distinction was not used for the following reasons:

- There is difficulty in establishing a precise definition of a new patient. New can refer to either the physician or the facility. Thus, a patient may be considered new only the first time the patient is treated as an outpatient at the hospital. Alternatively, the patient may be

considered new for each visit in which the patient is treated by a different physician. From a resource use perspective, the presence of new diagnoses or problems is often just as important as whether the patient is new to the facility or physician. The only definition of new that is not prone to upcoding is new to the facility.

- The impact on resources of whether a patient is a new patient varies by setting. For emergency room and same-day surgery units, the fact that the patient is new has little impact on resource use. For an outpatient clinic a new patient often utilizes more resources.
- To the extent that there are follow-up visits for a patient, they typically occur at the same facility as the initial visit. These lower cost visits balance out the often more costly initial visit.
- The designation of whether a patient is a new or established patient is not present on the healthcare institutional UB-04 claim form. Thus, a change in reporting requirements would have been necessary.

The final issue that was considered in the formation of the medical EAPGs was the amount and type of ancillary services that are typically provided to a patient. Because the cost of some ancillary services would be included in the base visit payment, patients with different profiles of ancillary service use needed to be in different EAPGs.

In more recent versions of EAPGs, comparison to DRG-based assignment of diagnosis codes was considered in the assignment of diagnosis codes to medical EAPGs, in order to align grouping across outpatient and inpatient settings, where possible.

## Per Diem EAPGs

Behavioral health and substance abuse treatment may be delivered as a per diem outpatient program or reported as individual behavioral health or substance abuse services (i.e. by HCPCS code). For per diem programs, EAPGs include a single per diem EAPG constituting a full day program for behavioral health and/or substance abuse treatment. The per diem EAPG is assigned based on HCPCS codes that identify a per diem HCPCS representing program services, or by accumulating at a minimum, three individual behavioral health or substance abuse HCPCS from Category 16 that are significant procedures. The assignment to the per diem EAPG also requires the reporting of a Behavioral Health or Substance Abuse qualifying diagnosis be present on the claim as a principal, secondary or reason for visit diagnosis. The list of diagnoses designated as qualifying for per diem are primarily those found in Chapter 5 of the ICD-10-CM manual. The complete list of qualifying diagnosis codes may be found in the per diem EAPG section of this manual.

In an effort to accommodate legislative language that narrowly restricts the description of services that may be provided in certain Medicaid programs, two additional groups were formed: Day Rehabilitation, Full Day and Half Day, with HCPCS codes specifically intended for use by full and half day rehabilitation programs. Users or programs that are not bound by the language restrictions may set the payment weights for these groups at the same level, or within the boundaries of, the per diem EAPG group. For more information, see Per Diem EAPGs for Behavioral Health and Substance Abuse.

## Observations

A visit can be for the purpose of observation only. This primarily occurs in the context of the emergency department (ED). In versions prior to 3.12, there were three EAPGs (maternity, behavioral health, and other diagnoses) for an observation visit. In addition, there is an ancillary EAPG for observation that can be assigned in addition to a medical visit. As of version 3.12, what has been recognized over the last several years is that observation is being utilized more frequently, and in order to provide greater granularity in the designation of the purpose of observation and the ability to consistently augment the presence of observation within a time threshold, the medical visit logic was expanded to directly incorporate all observation visit codes (Observation Visit Indicator codes, or those formerly assigned to EAPG 492). The outcome provides a medical visit EAPG based on the patient's principal diagnosis when either directly evaluated and/or referred for observation, plus the separate ancillary observation EAPG that can be controlled for duration of time under observation services. This simplifies user settings for observation and ensures greater standardization when tracking and paying for observation, as well as mirroring the existing use in conjunction with all medical visits. For more information, see Ancillary EAPGs – Ancillary Observation.

For the past several years, the EAPG grouper packages observation in the presence of a significant procedure but allows for separate payment of observation when reported for medical visits (mainly ED visits) without a significant procedure. EAPGs has progressively decreased the packaging of medical visit encounters when present with significant procedure types, starting with significant radiology procedures and physical therapy and rehabilitation, in order to identify that the medical visit is a distinct and separate evaluation and assessment of a patient from the radiologic or rehabilitative procedure reported for the same encounter. However, observation hours, when reported with the medical visit, continued to package in these encounters. In order to recognize more significant and separately payable observation events as those where the patient has been evaluated by the physician and is under observation for 8 or more hours, under EAPG grouper version 3.16, both the medical visit and the observation of 8 or more hours are separately payable when present with all significant procedure types, except for major surgical events (those EAPGs that continue to be designated as EAPG type 2).

## Development of Ancillary Service EAPGs

Ancillary services refer to ancillary tests (i.e., laboratory, radiology and pathology) and ancillary procedures (e.g., immunization, anesthesia, insertion of an IUD, etc.). Ancillary EAPGs were formed for each type of ancillary service. For a list of the Ancillary Service EAPGs, see Ancillary EAPGs.

Ancillary services do not dominate the time and resources expended during a visit but do increase the time and resources expended during a visit. Thus, ancillary services can be performed as part of a medical visit and do increase the cost of the medical visit. Examples of ancillary procedures include electrocardiograms, immunizations, introduction of needles and catheters, biofeedback, tube changes, minor reproductive procedures and minor ophthalmological procedures.

## Drugs and biologicals administration

There are two significant procedure EAPGs for intravenous drug and biological infusions that are based on the length of administration of the drugs and biologicals (i.e., infusions that take up to 1 hour and extended infusions lasting more than 1 hour). These two significant procedure EAPGs reflect the difference in supplies and the labor cost of monitoring the administration of the drugs and biologicals. There is a second major cost component associated with drugs and biologicals and that is the acquisition cost of the drugs and biologicals, discussed later in this section.

### EAPG assignment for Drug Administration

For drug administration CPT®/HCPCS codes under EAPG, the method of administration was reviewed to develop standards for assignment, separating extended administration from non-extended administration, and considering injection drug administration as ancillary. The following significant procedure and ancillary EAPG groups for drug administration are listed below, with the criteria developed for assignment:

EAPG	Description	Standard	Notes
110	Pharmacotherapy by Extended Infusion	Administration time extends beyond one hour; complex infusions	Includes therapeutic, chemotherapeutic and hydration infusions that extend past one hour; includes add-on codes for infusion of each additional hour; also includes complex forms of infusion (e.g. intra-cavity, intrathecal)
111	Pharmacotherapy Except by Extended Infusion	Administration time is up to one hour	Includes therapeutic, chemotherapeutic and hydration infusions lasting up to one hour
109	Ancillary Drug Administration	Administration time is minimal; less than 30 minutes	Includes therapeutic and chemotherapeutic injections; intramuscular, subcutaneous, and injections given by intravenous push technique (e.g. intra-arterial, intravenous)

The standards allow the reporting of hydration as a separate infusion service, if clinically warranted, when performed with therapeutic or chemotherapeutic drug infusion. Consolidation occurs when procedure codes from EAPG 110 and EAPG 111 (in Category 6) are reported for the same day or visit; EAPG 110 consolidates procedures assigned to EAPG 111 that are performed on the same day or visit.

Therapeutic or chemotherapeutic injections that are administered via push technique (intravenous, intramuscular, intra-arterial, subcutaneous or other routes) are considered ancillary services and standardly package when present with other significant procedures or medical visit services reported for the same day/visit.

### EAPG assignment for Drug and Biological Agents

Costs of drugs or chemotherapeutic agents administered may be packaged into other procedures or services (EAPG 490 in Category 30) performed for the same day or visit, or, may be separately paid, dependent upon current user-defined configuration or payer policy. The standard grouper packages minor drug and chemotherapeutic EAPG groups.

Enhanced APG drug groups are structured to cover acquisition costs associated with average per patient utilization of drugs. Drugs, identified by HCPCS code, are categorized based upon published unit acquisition cost and average per patient dosage within thirteen levels. Seven lower levels, covering the bulk of practice expense, distinguish between pharmacotherapy, and chemotherapy drugs. After clinical review, drugs with clinical substitutes, for example generic alternatives, may be placed in lower levels than acquisition cost may otherwise indicate.

Users wishing to establish payment rates for drug EAPGs have numerous options. Payment rates can be established using:

- Historical claims charges
- Historical claims units per HCPCS code and an external pricing source (i.e Medicare ASP)
- A national database of units per HCPCS code and an external pricing source (i.e Medicare ASP)
- Central target rates used in constructing the EAPG groups

High cost drugs can be problematic as their cost can fall outside of the general range of the EAPG drug classes. Payers may setup additional strategies in order to provide proper payment for these high cost drugs. Additional strategies can include:

- Setting up an appeals process for specific drugs or an EAPG Class (e.g., level 13) to review medical necessity criteria and to calculate an acceptable payment amount based on the review.
- Establishing an outlier policy and approach for out of norm high cost drugs.
- Setting up a parallel payment system to carve out identified drugs or drug classes from EAPGs average payment and establish an alternative payment method (e.g., establish a fee schedule rate with a flat fee and multiply based on the reported dosage).

As cost of drugs fluctuate, EAPG drug groups are revisited annually to review current assignment with refreshed data and to incorporate industry suggestions when received.

## Ancillary tests and procedures

Ancillary procedures are procedures that do not dominate the time and resources expended during a visit but do increase the time and resources expended during a visit. Thus, ancillary procedures can be performed as part of a medical visit and do increase the cost of the medical visit. Ancillary procedures include immunizations, introduction of needles and catheters, biofeedback, tube changes, minor reproductive procedures and minor ophthalmological procedures. Immunizations were divided into three EAPGs based primarily on the cost of the vaccine (e.g., rabies vaccination is considered a level II immunization).

## Laboratory

The laboratory department in which the laboratory test is typically performed was used as the primary variable in the formation of the laboratory EAPGs. Thus, tests performed by the

different laboratory departments (e.g., hematology, microbiology, toxicology, etc.) were assigned to different EAPGs. The testing method (e.g., radioimmunoassay) was used to a limited extent when the method represented a substantially different type of test with relatively clear indication for usage. However, in general, different methods of performing the same test were placed in the same EAPG. A laboratory technician will typically employ different methods depending on the precision of result that is needed. However, different methods are also employed depending on the training of the laboratory professional. As a consequence, the different methods for performing the same test were usually assigned to the same EAPG. The same type of laboratory test (e.g., chemistry) was sometimes differentiated by the source of specimen (e.g., blood versus urine) in order to account for the labor cost of collecting and transporting the specimen. Finally, the same type of laboratory test was usually differentiated based on the complexity of the test. Tests that required more time, technicians with greater skill levels or expensive equipment were assigned to different EAPGs. For example, panel or disease-oriented chemistry tests were assigned to a separate EAPG from other general chemistry tests because of different costs in the equipment used and the methods used to perform the test (e.g., many panel tests are automated). During the development of the laboratory EAPGs, physicians who either headed or worked in hospital laboratory departments and technicians who perform the tests were consulted. In addition, the laboratory relative value units (RVUs) developed by the College of American Pathologists were utilized.

## Pathology

Pathology was originally divided into three EAPGs based on the complexity of the pathology test. Pathology tests requiring more time or greater skill levels were assigned to a higher-level pathology EAPG based on the complexity of the test or procedure. In addition, pap smears were assigned to a separate EAPG.

Recently, additional pathology groups have been added to recognize separate pathology services, such as surgical tissue pathology, reproductive pathology and consultative pathology.

## Radiology

The type of equipment (magnetic resonance imaging [MRI], computed tomography [CT], conventional x-rays, etc.) was the primary classification variable for the radiology EAPGs because the cost of the radiology equipment varies considerably across the different types of radiological procedures. Nuclear medicine was separated into two diagnostic groups based on the complexity of the procedure, and a therapeutic group for radiopharmaceutical administration. The radiological procedures that met the definition of a significant procedure were collected in a separate significant procedure category; these include interventional radiology, magnetic resonance imaging, CT scans, nuclear medicine, and other radiological procedures expected to consume the majority of the resources during an outpatient visit. Less significant radiological procedures, including conventional x-rays, ultrasound, radiological guidance for significant diagnostic or therapeutic procedures, were classified as ancillary procedures and were included among the procedures subject to packaging with other procedures at payers' discretion.

In the grouper version 3.5 update, significant radiological procedures were recognized as a separate and distinct procedure type in EAPGs.

## Anesthesia

All of anesthesiology was assigned to a single EAPG. The EAPG payment system includes the cost of anesthesia in the payment for a significant procedure. The HCPCS codes do not differentiate between general and local anesthesia and it was therefore not possible to create separate general and local anesthesia EAPGs. However, the procedures in each significant procedure EAPG typically have the same type of anesthesia administered. Thus, the absence of a differentiation on the type of anesthesia did not present a problem.

## Development process

The process of formulating the EAPGs was highly iterative, involving statistical results from historical data combined with clinical judgment. A preliminary classification was developed based solely on clinical judgment. The preliminary classification was then evaluated using several databases including both commercial and non-Medicare patients and relative value units as well as charge data.

The preliminary EAPGs formed, based on clinical judgment, were evaluated using reports that displayed aggregate frequency and charge statistics as well as available RVU scales. For each HCPCS code within an EAPG, the report for significant procedure and ancillary service EAPGs displayed the frequency, mean charge and standard deviation of charges from each data base as well as the available RVU scales. Using this report, the HCPCS codes that comprise each EAPG were evaluated across all data bases and RVU scales simultaneously. The evaluation looked for consistency of average charges across the HCPCS codes within an EAPG across all the data bases as well as for consistency across the available RVU scales. For each ICD-10-CM diagnosis code, the report for the medical EAPGs displayed the summary statistics for charges. The evaluation of the medical EAPGs looked for consistency of average charges across the ICD-10-CM codes within an EAPG across all the data bases. As the EAPGs were being formed, the definitions were circulated to clinical consultants for comments on clinical appropriateness. This process of defining EAPGs and reviewing them both clinically and with the data was repeated numerous times. The overall objective of the process was to have clinically similar groups of patients with similar resource use but to achieve these objectives with as few EAPGs as possible.

During the formation of DRGs, charge data generally reflected the relative needs of patients. The number of bed-days and ancillary services consumed by inpatients depended on their needs. However, hospital ambulatory charges are also highly influenced by physician charges. A great deal of effort has been expended in the development of RVUs, such as the RBRVS developed for physician payment (Hsiao et al, 1988). RVU systems have been widely used for many years. Ambulatory charges for a procedure do not necessarily reflect the actual needs or complexity of an individual patient but are often based on the established RVU for the procedure. As a consequence, statistical results from charge data often simply reflect the established RVU scales. Although charge data were used extensively in the EAPG development, it was necessary for the clinical team to make judgments on whether observed hospital charge differences across

different procedures reflect real differences in the resources required to perform the procedure or any bias in the established RVU scales.

For example, there are different HCPCS codes for excisions of benign and malignant skin lesions. RVU and charge data implied that excisions of malignant skin lesions of the same site and size used significantly more resources than benign skin lesions. However, the histology of the lesion is often not known at the time of the procedure but is established when a pathology report is returned. Further, the excision of a malignant and benign skin lesion of the same site and size is fundamentally the same procedure except that a wider margin is excised for lesions that are suspected to be malignant. Thus, the significant procedure EAPGs do not differentiate between malignant and benign skin excisions. In addition, procedure EAPGs avoid assigning procedures to different EAPGs based on subtle or easily gameable distinctions in the HCPCS codes. For example, deep and superficial muscle biopsies are in the same EAPG because the distinction between deep and superficial lacks a precise definition in the HCPCS system.

The development of the EAPGs required a balance between the number of EAPGs, clinical consistency and homogeneity in charges and visit time. Clinical consistency was required in order for any procedures or diagnoses to be grouped into an EAPG. However, in general, EAPGs were not formed solely on clinical grounds. Verification of consistent differences in charges or visit time was required in order to form an EAPG. In general, low volume EAPGs were not formed unless there was strong clinical justification and a large charge difference. For example, pacemaker replacements are infrequent on an outpatient basis, but pacemaker replacements do represent a clinically distinct group of patients with a very high cost. Thus, a pacemaker replacement EAPG was formed. The end result of the process of forming the EAPGs is a clinically consistent group of patient groups with homogeneous resource use.

Figure 1 provides an overview of the Enhanced APG assignment logic. Patients with any significant procedures are assigned to one or more significant procedure EAPGs. If there are no significant procedures present and there is a medical visit indicator (e.g., an Evaluation and Management HCPCS code (E&M)), the patient is assigned to a medical EAPG. In general, medical visits typically package when present with a significant procedure EAPG, unless user-defined grouper option settings indicate where a separate medical visit should be assigned. If there is neither a significant procedure nor a medical visit indicator present, but there are ancillary tests or services present, then the patient is only assigned one or more ancillary EAPGs. If there is no significant procedure, medical visit or ancillary services present, the claim is considered an error.

The EAPGs describe the complete range of services provided in the outpatient setting. The EAPGs can form the basic building blocks for the development of a visit-based outpatient prospective system and can provide a flexible structure for configuring a payment system to meet specific policy objectives.

In 2007 work on the Enhanced APGs was completed. Unlike Version 2.0 of the APGs, this version was constructed to be applicable to a wider scope of ambulatory settings including hospital clinics, hospital outpatient departments and ambulatory surgery centers. The overall changes in the Enhanced APGs are summarized in the following table:

<b>Groups</b>	<b>APG v2.0</b>	<b>APG v3.0</b>	<b>Enhanced APGs v3.18</b>
Significant procedure	135	225	135
Physical therapy and rehabilitation	–	–	5
Behavioral Health and Substance Abuse	–	–	16
Dental or Oral Surgery procedures	–	–	23
Radiological procedures	–	–	15
Diagnostic or Therapeutic procedures	–	–	56
Medical visit	83 Based on diagnosis	183 Based on diagnosis	213 Based on diagnosis
Drugs and biologicals	5	10	33
Devices	0	0	0
Partial hospitalization/Per diem	4	4	1
Ancillary tests and procedures	53	48	123
Observation	0	2 Medical	1 Ancillary
Other	2 Incidental 8 Error	3 Incidental 5 DME 1 Error	16 Incidental 26 DME 3 Error
<b>TOTAL</b>	<b>290</b>	<b>481</b>	<b>666</b>

### *Significant procedures*

With technological advancements, many procedures that had been performed only on an inpatient basis can now be performed on an outpatient basis. Such procedures were identified and moved into the most appropriate EAPG. For example, drainage of ovarian cyst procedures via abdominal approach are being performed on an outpatient basis and were assigned to a newer EAPG for uterine and adnexa gynecological procedures. Since the Enhanced APGs is intended to be applicable to a wider scope of ambulatory settings, there needed to be more detailed distinctions in the amount and type of ambulatory resources required by individual procedures. For example, in APG 2.0 there are two APGs for skin repair procedures. In the Enhanced APGs there are 14 skin-related procedure groups to better reflect the diversity of patients seen across different ambulatory settings. As a result of these changes the number of different types of significant procedure EAPGs increased significantly. After the allocation of procedures to the different significant procedure types, there remains 135 significant procedures, 5 physical therapy and rehabilitation groups, 16 behavioral health and substance

abuse, 23 dental procedure groups, 15 radiologic procedure groups, and 56 diagnostic significant procedure groups.

### *Medical EAPGs*

It is anticipated that the extent of ancillary packaging may vary widely across EAPG users. An aggressive packaging of ancillaries requires that more detailed distinctions in the medical reason for visit be made in order to reflect the different profiles of ancillary usage associated with different diagnoses. Additionally, in an effort to align services between ambulatory and inpatient settings, comparison of assignment of diagnosis codes across EAPGs and APR DRGs was conducted, and diagnosis code assignment changes were made, as well as several new medical EAPG groups. As a result of these efforts, the number of medical EAPGs was expanded from 83 to 213.

### *Drug and Biologicals, Brachytherapy Sources, Therapeutic Radiopharmaceuticals, and Blood Product EAPGs*

In APG 2.0 there were five APGs for chemotherapy drugs but no APGs for other drugs. There are now many more drugs and biologicals that are administered by short term or extended infusion and constitute the reason for an ambulatory visit. As a result, the Enhanced APGs includes twenty-one groups for chemotherapy and non-chemotherapy drugs; there are seven chemotherapy groups, seven pharmacotherapy groups, and an additional seven groups that combine chemotherapy and non-chemotherapy drugs. There are also two minor chemotherapy and pharmacotherapy groups for inexpensive, oral medications.

In recent years, additional changes have been made to the classification type for brachytherapy sources, therapeutic radiopharmaceuticals and blood products similarly to drugs and biologicals, since the pricing structures and calculation for relative weight determination are similar. Under version 3.16, there are three brachytherapy source groups, four therapeutic radiopharmaceutical groups were added, and two blood product groups were created from the blood product exchange groups (EAPGs 113, 114) specifically for blood product HCPCS codes (P9010-P9099), for which pricing is calculated per unit of blood. Thus, the total number of EAPG groups classified as drug type is 33.

### *Durable medical equipment*

Beginning in version 3.7 the principles of cost averaging was extended for services classified as Durable Medical Equipment (DME). Twenty-seven DME groups were formed for DME with similar anticipated costs. Grouping assignment, unless specified otherwise within the HCPCS code, is predicated upon the cost of new equipment purchases. The addition of DME groups to EAPG classification enables users to rapidly identify the presence of DME on associated claims during processing, but these groups are not intended to serve as the basis for payment for DME.

### *Ambulance services*

Beginning in version 3.13, a new group was formed for Ambulance Services to track usage of ambulance-related services present in outpatient claims data. The purpose of the new group was to classify all ambulance-related HCPCS codes without consideration given to differences in the type of ambulance service (Basic life support/Advanced life support, mileage vs. supplies, etc.). It is not intended to serve as the basis of payment for ambulance services but for monitoring.

### *Ancillary EAPGs*

Changes to ancillary groups were made to provide additional distinctions for some routine services as well as non-routine and more expensive ancillaries which would continue to be separately payable. The grouper includes a list of routine ancillary EAPGs that are standardly packaged with significant procedures or medical visits. Over the past several years, updates to this standard packaging list have been made to respond to coding system revisions, industry and technology changes, however this list is customizable by the end-user.

### *Preventive medicine*

Starting with version 3.8, new EAPGs were created with a designation of preventive and several existing EAPGs were classified with the additional marker of preventive in nature. Significant procedure, ancillary and medical EAPGs were included in Preventive Medicine.

New medical EAPG groups were introduced to represent preventive or screening medical visits. Preventive or screening services are those performed in the absence of illness or for those patients without signs or symptoms of illness. A principal diagnosis identifying a preventive or screening services visit assigns one of the new Preventive Medicine EAPG medical groups. Because several of these diagnosis codes may be assigned for an adult or child, additional criteria requiring the patient's age is used to determine which EAPG is assigned.

Additionally, there are several significant procedures and ancillary service Preventive EAPGs in which all codes within the EAPG are identified as preventive in nature. The EAPG grouper provides an indicator to identify all codes within these EAPGs that specify the HCPCS or CPT codes that are considered to be preventive in nature. There are also several significant procedure and ancillary service EAPGs that contain codes that are both preventive and non-preventive in nature. The EAPG grouper provides an indicator to identify the codes within these EAPGs that specify which HCPCS or CPT codes are considered to be preventive in nature.

With grouper version 3.9, preventive or prophylactic services for diabetic patients, including routine eye examinations and nail procedures were added with the designation of preventive, and also return an indicator when a diabetic diagnosis code is reported in any diagnosis position on the claim.

### Add-on procedure codes

Add-on codes are procedure codes which describe an additional service that is performed always in conjunction with a primary or base service. The add-on service may be an extension of the primary service (e.g. additional wound excision site, additional lesion), a completely separate procedure that is normally performed with the primary service, or a service that provides an increased level of complexity to the primary service. These conditions are considered when assigning the add-on code to an EAPG group when reported with its primary service.

The resulting assignment for the add-on code may be to a different EAPG group than the primary service for those that are considered separate procedures or those that provide an increased level of complexity to facilitate same or clinically-similar consolidation; the same or clinically similar group for those considered to be an extension of the primary service; or to ancillary or incidental groups for services that may be adjunctive to many different primary services to facilitate packaging.

### EAPG Service Lines

The EAPG Service Lines associated with the Enhanced APG classification system were developed by 3M HIS as a suggested way to organize EAPGs associated with hospital outpatient services. The 3M service line to EAPG list may not completely match service lines defined by a specific hospital provider but may be used as a reference for modeling service lines that may be unique to the provider.

Service Line	Service Line Description
1	Dermatology
2	General Surgery
3	Orthopedic Surgery
4	Pulmonary
5	Otolaryngology Surgery
6	Rehabilitation
7	Cardiology
8	Interventional Cardiology
9	General Medicine
10	Hematology
11	Gastroenterology
12	Preventive Care
13	Urological Surgery
14	Urology
16	Obstetrics

<b>Service Line</b>	<b>Service Line Description</b>
17	Gynecological Surgery
18	Neurology
19	Neurological Surgery
20	Pain Management
21	Ophthalmology
22	Ophthalmology Surgery
23	Otolaryngology
24	Diagnostic Radiology
25	Behavioral Health
26	Substance Abuse
27	Diagnostic Nuclear Medicine
28	Oncology
29	Dental
30	Anesthesia
31	Laboratory
32	Pathology
35	DME and Supplies
36	Chemotherapy and Pharmacotherapy
38	Orthopedics
39	Endocrinology
42	Gynecology
43	Neonatology
44	Infectious Disease
45	Burns
46	Ambulance
47	Interventional Radiology
48	Therapeutic Radiology
49	Rheumatology
50	Nephrology
52	Cardiothoracic Surgery
53	Vascular Surgery

<b>Service Line</b>	<b>Service Line Description</b>
54	Ancillary Services
55	Oral and Maxillofacial Surgery
56	Transplant Procedures
57	Electrophysiology
58	Bariatric Surgery
99	Unassigned

### *Total EAPGs*

Overall, the number of EAPGs was increased from 290 to 666. The increased specificity of the Enhanced APGs allows APGs to be applied to a wider range of ambulatory settings and provides the basis for aggressive packaging of ancillary services.

### **EAPG payment system**

In the EAPG payment system, a patient is described by a list of EAPGs that correspond to each service provided to the patient. The assignment of multiple EAPGs to a patient is in contrast with the DRG system that always assigns an inpatient to a single DRG. If a patient has multiple procedures, the DRGs use a procedure hierarchy to select the most appropriate DRG. The DRG payment includes the cost of all ancillary services provided to the patient. In the outpatient setting, the diversity of sites of service (i.e., same day surgery units, emergency rooms and outpatient clinics), the wide variation in the reasons patients require outpatient care (e.g., well care to critical trauma care) and the high percentage of cost associated with ancillary services (i.e., the cost of ancillary services can often exceed the cost of the base visit) necessitates a patient classification scheme that can closely reflect the services rendered to the patient. The EAPGs address the diversity within the outpatient setting by assigning patients to multiple EAPGs when needed. For example, if a patient had two procedures performed plus a chest x-ray and a blood test, then there would be four EAPGs assigned to the patient (i.e., one EAPG for each procedure plus the EAPGs for the chest x-ray and the blood test). In an OPSS, each EAPG would have a standard payment rate, and the payment for a patient would be computed by summing the payment rates across all the EAPGs assigned to the patient. However, in order to provide incentives for efficiency and to minimize opportunities for upcoding of EAPGs, not all the EAPGs assigned to a patient are used in the computation of the payment. The EAPG system uses three techniques for grouping different services provided into a single payment unit: ancillary packaging, significant procedure consolidation and multiple significant procedure and ancillary discounting.

### *Ancillary packaging*

A patient with a significant procedure or a medical visit may have ancillary services performed as part of the visit. Ancillary packaging refers to the inclusion of certain ancillary services into the EAPG payment rate for a significant procedure or medical visit. For example, a chest x-ray can be packaged into the payment for a pneumonia visit. The packaging of ancillaries does not imply that there would be no payment associated with the packaged ancillary. The cost of the packaged ancillaries would be included in the payment amount for the significant procedure or medical EAPG. For example, if a packaged ancillary cost \$20 and is performed for 50 percent of the patients in a medical EAPG, then \$10 (i.e., 50 percent of \$20) would be included in the payment rate for the medical EAPG.

Under Medicare's DRG-based PPS for hospital inpatient care, all ancillary services provided to a patient are packaged into the payment for the DRG to which the patient is assigned. Because of the nature of outpatient care, it is not clear that all services provided or ordered during a visit can be packaged into one payment rate. Ancillary packaging allows the payer to make a single payment for a well-defined package of ambulatory services, thereby creating a consistent definition of services across providers. Packaging gives providers the incentive to improve their efficiency by avoiding unnecessary ancillaries and by substituting less expensive but equally effective ancillary services for more costly options.

There are also some potential problems in the packaging of ancillaries. Packaging places providers at financial risk. If expensive ancillaries that are not usually performed for a particular type of visit are included in the packaged payment, the financial risk may be excessive. For example, if a \$500 test that occurs on average only once per hundred visits was packaged, then the packaged payment for each visit would include only \$5 for this test. Therefore, only relatively inexpensive, frequently performed ancillaries were packaged.

Ancillary services that are inexpensive or frequently provided are packaged into the payment for the significant procedure or medical visit. However, other ancillary services, particularly those that are expensive or infrequently performed, for example, complex laboratory or pathology tests or treatment planning services, are paid as separate ancillary EAPGs. This limits the providers' risk. There are two approaches to selecting the ancillaries to be packaged: clinical or uniform.

A clinical packaging approach selects the ancillaries to be packaged on an EAPG specific basis. The ancillaries to be packaged are selected primarily on clinical grounds. Thus, only ancillaries that are clinically expected to be a routine part of the specific procedure or medical visit are packaged. The clinical approach has the benefit that the resulting package for a visit is clinically meaningful.

The alternative to clinical packaging is to develop a uniform list of ancillaries that are always packaged into every significant procedure or medical visit. There are several advantages associated with a uniform packaging of ancillaries. A uniform packaging is administratively simple. Once the uniform list of ancillaries is developed, both the payer and providers know that every ancillary on the list is always packaged. Thus, the tracking of the ancillaries that are packaged is straightforward. Further, a uniform list of packaged ancillaries is simple for hospitals to explain to their medical staff and thus, the incentive to efficiently utilize the packaged ancillaries can be effectively communicated. A uniform list of ancillaries is less prone to manipulation by providers. With a clinical packaging of ancillaries, procedure or medical visits

have different levels of ancillaries packaged across the different EAPGs. Thus, there is an incentive to code the patient into the significant procedure or medical EAPG with the fewest packaged ancillaries. This presents a particular problem for medical visits in which multiple diagnoses are present. For medical visits with multiple diagnoses, the ancillary tests may be performed for the secondary diagnoses. Under a clinical packaging, low cost nonroutine tests are not necessarily packaged into the visit payment. This provides a financial incentive for providers to perform such nonroutine tests. A uniform packaging includes a wider array of ancillaries in the packaging for each EAPG and thus, there is less opportunity for additional payments from nonroutine ancillaries.

Prior to version 3.5 of the Enhanced APGs, a uniform packaging of ancillaries was used in the EAPG payment system. The administrative simplicity, the relative freedom from manipulation and the wider scope of uniform packaging of ancillaries led to its adoption in the early implementation years. In general, the ancillaries in the uniform packaging included ancillaries that are performed for a wide range of different types of visits and were relatively low cost compared with average cost of the procedure and medical EAPGs. Only relatively low-cost ancillaries were included in the uniform packaging because if high-cost ancillaries were packaged into the visit payment, the patients who required such ancillaries would cause a substantial financial loss for the hospital.

Beginning with version 3.5 of the Enhanced APGs, the need for increased flexibility in the application of ancillary packaging was recognized. The same list of ancillary procedures was used but was no longer uniformly applied to all significant procedure and medical visits; rather, a differential packaging approach was introduced that offered users the opportunity to select the EAPG type with which the ancillary procedure is packaged.

The list of ancillaries included in the packaging option and the procedure types with which individual ancillaries are to be packaged or not is a policy decision.

### *Significant and other procedure consolidation*

When a patient has multiple procedures from any one of the significant or other procedure types groups, some of the procedures in the same EAPG group or of clinical similarity but in different EAPG groups, may require minimal additional time or resources. Significant and other procedure consolidation refers to the collapsing of multiple-related significant or other procedure EAPGs into a single EAPG for the purpose of the determination of payment. A significant and other procedure consolidation list was developed based on clinical judgment and observation of outpatient claims with multiple significant procedure occurrence. The significant and other procedure consolidation list identifies, for each significant or other procedure EAPG, the other procedure EAPGs that are an integral part of the procedure and can be performed with relatively little additional effort and are, therefore, consolidated. For example, the level I thoracic procedure EAPG is consolidated into the level II thoracic procedure EAPG. Conversely, unrelated significant procedures are not consolidated by the significant procedure list. For example, the treatment of a closed fracture and the suturing of a complex skin laceration result in two significant procedure EAPGs being used in the computation of the payment. Multiple unrelated significant procedures performed during the same visit are not consolidated in order to provide a fair level of payment and to avoid creating the incentives to have separate visits for each procedure.

Significant and other procedure consolidation also greatly reduces the opportunities for the fragmentation of procedures for the purpose of increasing payment. For example, all minor skin procedures are consolidated into the significant procedure EAPGs that involve penetration of the skin (e.g., hernia repair). Because all procedures in the same EAPG and all significant procedures that can be performed as part of another significant procedure are consolidated into a single EAPG for payment purposes, fragmentation opportunities are minimized.

### *Discounting*

When multiple significant and other procedures are performed or when the same ancillary service is performed multiple times, a discounting of the EAPG payment rates can be applied. Discounting refers to a reduction in the standard payment rate for an EAPG. Discounting recognizes that the marginal cost of providing a second procedure to a patient during a single visit is less than the cost of providing the procedure by itself. For example, discounting could compensate for the reduced cost per procedure of doing multiple significant procedures at the same time. When multiple significant procedures are performed, in general, the patient preparation, use of the operating room and recovery time is shared between the two procedures. Thus, the cost of doing two procedures at the same time is less than the cost of doing the two procedures at two different times. Discounting can also be used to provide a financial incentive not to repeat the same ancillary service multiple times. Because the performance of multiple ancillaries in the same EAPG may be clinically necessary and appropriate, there is no consolidation of ancillaries within the same EAPG. Thus, each nonpackaged ancillary in the same EAPG will result in an additional payment. However, in order to provide some financial incentive not to repeat ancillary tests, multiple ancillaries in the same EAPG could be discounted. The level of any discounting is a policy decision and would be determined during system implementation.

Discounting of multiple significant procedures is typically performed for procedures of the same significant procedure type, however, there is an exception when multiple procedures are present from EAPGs that are significant procedure type 2, and diagnostic or therapeutic significant procedure type 25; discounting will apply. The reasoning behind this cross-type discounting is to recognize diagnostic procedures that may be performed on the same day as a significant surgical procedure or a therapeutic event that may be required as a result of any diagnostic procedure performed (e.g. a screening colonoscopy that requires a therapeutic event for tumor excision).

The components of an EAPG payment system are summarized in the following table. Packaged ancillaries, incidental procedures, most drugs and biologicals and supplies are included in the payment amount for a significant procedure and medical visit. Anesthesia and consolidated significant procedures are also included in the payment amount for a significant procedure. Additional EAPG payments are made for non-packaged ancillaries, non-consolidated significant procedures and selected drugs and biologicals.

Primary EAPG Type	Items Included in the Base EAPG Payment	Items for Which Additional Payment is Permitted
Significant Procedure	Routine Ancillaries Incidental Procedures Supplies Drugs (Minor and Level I chemotherapy, drugs and biologicals) Anesthesia	Significant Unrelated Procedures with any Applicable Discounts Non-Packaged Ancillaries Selected chemotherapy and selected drugs and biologicals
Medical Visit	Packaged Routine Ancillaries Incidental Procedures Supplies Drugs (Minor and Level I chemotherapy, drugs and biologicals)	Non-Packaged Ancillaries Selected chemotherapy and selected drugs and biologicals
Ancillary Only		Ancillary Only Items Are Paid Separately

The next table contains an example of the application of the EAPG payment system. The Level II Endoscopy of the Upper Airway is the primary significant procedure and would receive the full EAPG payment amount. The Level I Endoscopy of the Upper Airway is consolidated into the Level II Endoscopy of the Upper Airway and would receive no additional payment.

The Level I Facial and ENT Procedure is unrelated to the Endoscopies and would receive a discounted (e.g., 50 percent) payment. The Level I Pathology, Basic Chemistry, Chest X-Ray and anesthesia are all packaged and would receive no additional payment. The Level II Complex Laboratory Test is not packaged and would receive the full payment amount. Thus, the EAPG payment for this visit would be the sum of the payment amount for the Level II Endoscopy of the Upper Airway, fifty percent of the payment amount for the Level I Facial and ENT procedure and the full payment amount for the Level II Complex Laboratory Test.

CPT Code	EAPG Assigned	Payment Element	Payment Action	Payment Discount
31545	063 Level II Endoscopy of Upper Airway	Significant Procedure	Full Payment	100%
31515	062 Level I Endoscopy of Upper Airway	Related Procedure	Consolidated	0%
31002	252 Level I Facial and ENT Procedures	Unrelated Procedure	Discounted	50%
88331	390 Level I Pathology	Routine Ancillary	Packaged	0%
82435	402 Basic Chemistry Tests	Routine Ancillary	Packaged	0%

<b>CPT Code</b>	<b>EAPG Assigned</b>	<b>Payment Element</b>	<b>Payment Action</b>	<b>Payment Discount</b>
93000	413 Cardiogram	Routine Ancillary	Packaged	0%
00322	380 Anesthesia	Routine Ancillary	Packaged	0%
0058U	386 Level II Complex Laboratory, Molecular Pathology and Genetic Tests	Non-Routine Ancillary	Full Payment	100%

A visit-based EAPG PPS with uniform ancillary packaging, significant procedure consolidations and multiple procedure discounting has many positive attributes.

- Many similar units of service are aggregated together, greatly reducing the number of units of service.
- The need to establish separate payment rates for minor differences in the unit of service is eliminated.
- The opportunity for unbundling the units of service is greatly reduced.
- There is a financial incentive to use packaged ancillary services efficiently.
- Multiple procedures during a visit are reasonably compensated, but not excessively rewarded.
- Payment of medical visits is based on the type of patient treated and not on the level of effort reported by the physician.

The structure of the EAPG payment model provides considerable flexibility. By modifying the level of ancillary packaging and discounting, the incentives in the system can be altered in order to achieve specific policy objectives.

## Implementation issues

The implementation of an EAPG based OPPS requires a number of policy decisions to be made. These policy decisions shape the incentives and nature of the OPPS.

### Basis of payment weights

The EAPG payment weights can be computed based on either the charges or cost reported by hospitals. Since the markup from cost to charges can vary considerably across hospital outpatient departments, there can be substantial differences in the payment weights computed from charges versus those computed from cost. If the historical charges or cost for some procedures are artificially high, then the EAPG payment weights would be disproportionately high. Although there are significant administrative challenges associated with computing cost-based payment weights, cost-based payment weights in general provide a more accurate measure of the relative number of resources used by patients in each EAPG.

### **Extent of ancillary packaging and discounting**

The extent of Ancillary Packaging can vary from none to the packaging of all routine ancillaries. Similarly, multiple procedure discounting can vary from none to a 100 percent discount (i.e., no payment) for additional significant procedures.

### **Window of time for ancillary packaging**

The window of time for including packaged ancillaries in the EAPG payment can include only the ancillaries delivered on the day of the significant procedure or medical visit or can be expanded to include ancillaries delivered on the days preceding or following the significant procedure or medical visit when reported on the same claim. Note that in order to perform cross day ancillary packaging the claims processing system would need to be able to aggregate claims for the same person across days into a single visit. This can be accomplished by use of the Claim Action Flag in the user-defined configuration for option settings.

### **Outlier policy**

Outliers are atypical cases that have costs much higher than the EAPG payment amount. Additional payments can be provided to outlier cases. The extent of outlier payments can vary from none to a significant percentage of cases being provided outlier payments.

### **Volume of visits**

In any visit-based system, hospitals can increase revenue by increasing the number of visits. Thus, some means of monitoring and controlling the number of visits should be implemented.

### **Upcoding and fragmentation of procedure codes**

Although the aggregation of codes into the EAPGs and significant procedure consolidation minimizes the opportunities for upcoding, hospital coding practices need to be monitored.

### **Identification of visits**

Since EAPGs are a visit-based payment system, it is essential that visits can be unambiguously identified from the claim form. Batch bills, in which the dates of service span more than one day, can present difficulties for the identification of individual visits. Clear rules for the reporting of the dates of service and the submission of batch bills need to be established. The result of these rules should be the ability to uniquely identify an individual visit and the services rendered during that visit even if multiple visits are submitted on a single claim.

### **Shift of ancillaries to nonhospital settings as a result of ancillary packaging**

If the implementation of an EAPG based PPS includes packaging of ancillary services, hospitals have the financial incentive not to provide the ancillary services directly but to send the patient to a nonhospital setting for the ancillary tests. The nonhospital facility could then bill separately for the ancillary tests. Thus, ancillaries ordered by hospital outpatient departments but delivered by nonhospital settings must be able to be identified within the claims processing system. In order to expand the window of services for ancillary packaging and to include within the

ancillary packaging, all ancillaries ordered by the hospital outpatient department, and the claim processing system must identify the provider that ordered an ancillary service.

### **Payment of ancillaries ordered outside the hospital**

A large volume of the services provided by the ancillary department of hospitals are ordered by private physicians or other nonhospital based providers. If hospitals are paid on an EAPG basis for ancillaries ordered outside the hospital, and nonhospital facilities are paid on a different basis, then there is a payment differential for the same ancillary depending on whether the ancillary service is delivered by a hospital or a nonhospital facility. If hospital ancillary departments are paid less than nonhospital facilities, that places hospitals at a competitive disadvantage. A negative price differential could cause a shift of ancillary services out of the hospital.

### **Applicability**

An outpatient PPS need not be limited to hospital outpatient departments but could also include entities that provide similar services. For example, ambulatory surgery centers and free-standing radiology centers that provide services similar to hospital outpatient departments could also be included in an outpatient PPS.

### **Consistency with inpatient payment levels**

Depending on the payment rate for a procedure performed on an inpatient basis, as compared to the EAPG payment for the same procedure, there may be a financial incentive to perform the procedure on an inpatient basis. The inpatient and outpatient payment rates for the same procedure need to be established to provide the proper financial incentives.

### **Hospital-specific payment adjustments**

The inpatient PPS adjusts the DRG payment levels for hospitals based on hospital-specific factors such as disproportionate share and teaching status. An evaluation of whether additional adjustments are necessary in an EAPG based outpatient PPS should be performed.

## **Conclusions**

A visit based EAPG prospective payment system can provide an effective system for the payment of the facility component of hospital-based outpatient care. The EAPGs form a manageable, clinically meaningful set of patient groups that relate the attributes of patients to the resource demands and associated costs experienced by a hospital outpatient department. The components of the EAPG payment system can be configured by way of user-specific grouping options to achieve specific policy objectives and to provide financial incentives for hospitals to provide efficient care.

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